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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/622,523	12/07/2000	Mikael Isaksson	S1022 /8518	7223
23628	7590	08/05/2005	EXAMINER	
WOLF GREENFIELD & SACKS, PC FEDERAL RESERVE PLAZA 600 ATLANTIC AVENUE BOSTON, MA 02210-2211			PHU, PHUONG M	
			ART UNIT	PAPER NUMBER
			2631	

DATE MAILED: 08/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/622,523

Applicant(s)

ISAKSSON ET AL.

Examiner

Phuong Phu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-32 and 34-38 is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4-10 is/are rejected.
- 7) ☒ Claim(s) 3 and 33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/21/04</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

This Office Action is responsive to the RCE filed on 5/21/04.

#### ***Claim Objections***

1. Claims 9 and 10 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only and/or cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims 9 and 10 have not been further treated on the merits.
2. Claim 2 recites the limitation "said at least two modems". This limitation is lack of antecedent basis.
3. Claim 4 recites the limitation "said pulse shaped wings" on line 2. This limitation is lack of antecedent basis.
4. Claim 8 recites the limitation "said receiver". This limitation is lack of antecedent basis.

#### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, 4-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bingham (6,035,000), previously cited, in view of Gudmundson et al (5,790,516), provided in the IDS filed on 5/21/04.

-Regarding to claim 1, see figures 1 and 12, and col. 4, lines 16-50 and col. 13, line 7 to col. 14, line 44, Bingham discloses a telecommunications transmission system (see figure 1)

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having at least two VDSL systems, each comprising a pair of modems (one modem of the pair located in ONU (11) and the other of the pair located in (18)), said at least two VDSL systems belonging to a binder group (21) common to the at least two VDSL system, wherein a transmitter (40) in a first modem (see figure 12) in the pair of the modems including an extension means (ADD CYCLIC PREFIX) for cyclic extension of a DMT-symbol by way of adding a prefix.

Bingham does not disclose a pulse shaper means, adapted to pulse shape sidelobes of a cyclic extended DMT-symbol.

In a similar endeavor, Gudmundson et al teaches using a pulse shaper means (406) adapted to pulse shape sidelobes of a cyclic extended DMT-symbol outputted from an extension means (Cyclic Extension Circuitry (405)) for reducing intersymbol interference (ISI) during transmission (see figure 4A, and col. 4, lines 15-35, col. 6, line 64 to col. 7, line 45).

Therefore, it would have been obvious for a person skilled in the art to implement Bingham with a pulse shaper means in such a way that the pulse shaper means is adapted to pulse shape sidelobes of a cyclic extended DMT-symbol outputted from an extension means (ADD CYCLIC PREFIX), as taught by Gudmundson et al, in order to reducing intersymbol interference (ISI) of the cyclic extended DMT-symbol which may occurs during being transmitted to the receiving site at the other modem of the pair of the modems.

-Regarding to claim 2, in Bingham, said modems in the pair of modems are inherently modems.

-Regarding to claim 4, Bingham in view of Gudmundson et al teaches that pulse shaped wings are in form of a raised cosine pulse (see Gudmundson et al, figures 3A-3C, and col. 4, lines 23-36 and col. 5, line 19 to col. 6, line 43).

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-Regarding to claims 5 and 6, Bingham in view of Gudmundson et al is silent whether the same or different number of sub-carriers are used for transmission in an up stream direction as are used for transmission in a down stream direction.

However, while using time multiple access schemes are well-known in the art to allow the same or different number of sub-carriers are used for transmission in an up stream direction as are used for transmission in a down stream direction in a communication system which utilizes DMT technology, and the examiner takes Official Notice, it would have been obvious for a person skilled in the art, within his skills, to implement Bingham system in view of Gudmundson et al in such a way that under a time multiple access scheme, the same or different number of sub-carriers are used for transmission in an up stream direction as are used for transmission in a down stream direction so that the upstream and down stream can be recovered at a respective receiving end.

-Regarding to claim 7, Bingham in view of Gudmundson et al discloses that said transmitter comprises a buffer (BUFFER) and encoder (43) (see Bingham figure 12) for receiving an input bit stream at a rate, an n-point IDFT processor (IFFT) for receiving an output from said buffer and encoder (see Bingham figure 12), extension means (ADD CYCLIC PREFIX) (see Bingham figure 12) for adding a cyclic extension to an output of said IDFT processor, a pulse shaper (406) (see Gudmundson et al, figure 4A) for shaping a DMT symbol output from said extension means, and a digital to analog converter (48) and low pass filter (46) (see Bingham figure 12) for converting a DMT symbol received from said pulse shaper to analog form and passing said DMT to a transmission channel.

-Regarding to claim 8, as applied to claim 1, Bingham in view of Gudmundson et al discloses a receiver (see Bingham, figure 12) wherein said receiver includes an analog to digital converter (72) for digitizing a DMT symbol received from a transmission channel, a windowing unit (inherently included in corresponding to said pulse shaper means of said transmitter) connected to an output of said analog to digital converter, a stripper unit (STRIP CYCLIC PREFIX) for removing cyclic extensions to said DMT symbol, an n-point DFT processor (FFT) for receiving an output from said stripper unit, a frequency domain equalization unit (FEQ) for receiving an output from said n-point DFT unit and decoder (DEMODULATOR), and a buffer (BUFFER) for receiving an output from said frequency domain equalization unit and outputting a bit stream at a rate.

-Regarding to claim 9, Bingham in view of Gudmundson et al discloses a modem in a transmission system wherein the modem comprises a transmitter, as claimed (see Bingham figure 12 and Gudmundson et al, figure 4A).

-Regarding to claim 10, Bingham in view of Gudmundson et al discloses a modem wherein the modem includes a receiver, as claimed (see Bingham figure 12 and Gudmundson et al, figure 4A).

***Allowable Subject Matter***

7. Claims 11-32 and 34-38 are allowed.
8. Claims 3 and 33 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong Phu whose telephone number is 571-272-3009. The examiner can normally be reached on M-F (6:30-2:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Phuong Phu*

Phuong Phu  
08/01/05

**PHUONG PHU  
PRIMARY EXAMINER**

Phuong Phu  
Primary Examiner  
Art Unit 2631